

CLAIMS

What is claimed is:

1. An apparatus for maintaining a stable RF level in an optical link, said apparatus
2 comprising:
 - 3 a transmitter section;
 - 4 a receiver section;
 - 5 a plurality of feedback loops operationally connected to said transmitter section;
 - 6 and
 - 7 a plurality of feedback loops operationally connected to said receiver section.
 1. The apparatus of claim 1, wherein the feedback loops perform at least one
2 function selected from the group consisting of:
 - 3 i. RF level stabilization effects;
 - 4 ii. preserve or change optical modulation index (OMI);
 - 5 iii. adjust output power;
 - 6 iv. compensate for temperature changes;
 - 7 v. compensate for laser or system tracking errors;
 - 8 vi. provide gain at proper places in circuitry; and
 - 9 vii. provide RF input changes.

1 3. The apparatus of claim 2, wherein the feedback loops operationally connected to
2 said transmitter section include a first, second, and third transmitter section feedback
3 loops.

1 4. The apparatus of claim 2, wherein the feedback loops operationally
2 connected to said receiver section include a first and second receiver section feedback
3 loops.

1 5. The apparatus of claim 3, wherein the first transmitter feedback loop is a constant
2 power feedback loop.

1 6. The apparatus of claim 3, wherein the second transmitter feedback loop is a bias
2 current feedback loop connected between the transmitter section and an attenuation
3 circuit in an RF path.

1 7. The apparatus of claim 5, wherein the attenuation circuit is a PIN transistor
2 circuit.

1 8. The apparatus of claim 3, wherein the second transmitter feedback loop is a bias
2 current feedback loop.

1 9. The apparatus of claim 3, wherein the third transmitter feedback loop provides an
2 RF level from a back facet monitor.

1 10. The apparatus of claim 9, further including an oscillator operationally connected
2 to said third transmitter feedback loop.

1 11. The apparatus of claim 10, wherein said oscillator is characterized by an
2 operational frequency of about 100 kHz.

1 12. The apparatus of claim 10, wherein said oscillator has an output signal, said
2 output signal coupled to an input of an RF detector, said RF detector having an
3 attenuating output proportional to said input, and said attenuating output coupled to the
4 attenuation circuit.

1 13. The apparatus of claim 4, wherein the first receiver feedback loop is an optical
2 modulation voltage (OMV) feedback loop, said optical modulation voltage feedback loop
3 connected to RF circuitry in said receiver section.

1 14. The apparatus of claim 4, wherein the second receiver feedback loop is an
2 oscillator signal feedback loop, said oscillator feedback loop connected to RF circuitry in
3 said receiver section.

4 15. The apparatus of claim 14, wherein said oscillator feedback loop includes an
5 oscillator tuned to a frequency of about 100 kHz.

1 16. The apparatus of claim 14, wherein said oscillator feedback loop includes a device
2 to modulate said oscillator feedback.

1 17. A method of stabilizing an RF level in an optical link, said method comprising:
2 providing an optical signal transmitter section;
3 providing an optical signal receiver section;
4 providing a plurality of feedback loops to said optical signal transmitter section;
5 and
6 providing a plurality of feedback loops to said optical signal receiver section.

1 18. The method of claim 17, wherein the feedback loops perform at least one
2 function selected from the group consisting of:
3 i. RF level stabilization effects;
4 ii. preserve or change optical modulation index (OMI);
5 iii. adjust output power;
6 iv. compensate for temperature changes;
7 v. compensate for laser or system tracking errors;
8 vi. provide gain at proper places in circuitry; and
9 vii. provide RF input changes.

1 19. The method of claim 17, wherein the feedback loops operationally connected to
2 said transmitter section include a first, second, and third transmitter feedback loops.

1 20. The method of claim 17, wherein the feedback loops operationally

2 connected to said receiver section include a first and second receiver feedback loops.

1 21. The method of claim 18, wherein the first transmitter feedback loop is a
2 constant power feedback loop.

1 22. The method of claim 18, wherein the second transmitter feedback loop is a bias
2 current feedback loop connected between the transmitter section and an attenuation
3 circuit in an RF path.

1 23. The method of claim 21, wherein the attenuation circuit is a PIN transistor circuit.

1 24. The method of claim 18, wherein the second transmitter feedback loop is a bias
2 current feedback loop.

1 25. The method of claim 18, wherein the third transmitter feedback loop provides
2 an RF level from a back facet monitor.

1 26. The method of claim 24, further including an oscillator operationally connected
2 to said third transmitter feedback loop.

1 27. The method of claim 25, wherein said oscillator is characterized by an

2 operational frequency of about 100 kHz.

1 28. The method of claim 25, wherein said oscillator has an output signal, said
2 output signal coupled to an input of an RF detector, said RF detector having an
3 attenuating output proportional to said input, and said attenuating output coupled to the
4 attenuation circuit.

1 29. The method of claim 19, wherein the first receiver feedback loop is an optical
2 modulation voltage (OMV) feedback loop, said optical modulation voltage feedback loop
3 connected to RF circuitry in said receiver section.

1 30. The method of claim 19, wherein the second receiver feedback loop is an
2 oscillator signal feedback loop, said oscillator feedback loop connected to RF circuitry in
3 said receiver section.

1 31. The method of claim 29, wherein said oscillator feedback loop includes an
2 oscillator tuned to a frequency of about 100 kHz.

1 32. The method of claim 29, wherein said oscillator feedback loop includes a device
to modulate said oscillator feedback.

1 33. An optical transmission system comprising:
2 an optical signal transmitter section;
3 an optical signal receiver section;
4 an RF stabilization system operationally connected to said optical signal
5 transmitter section; and
6 an RF stabilization system operationally connected to said optical signal receiver
7 section.

1 34. The optical transmission system of claim 33, wherein the optical transmission
2 system is a cable television (CATV) system.